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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/684,519	10/10/2000	Jin-Yuan Lee	MEG2000-001	3369

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EXAMINER

BUI, HUNG S

ART UNIT	PAPER NUMBER
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2841

DATE MAILED: 11/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

AM

Office Action Summary

Application No.

09/684,519

Applicant(s)

LEE, YIN-YUAN

Examiner

Hung S Bui

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 18-24, 35-39, 52-58 and 69-72 is/are rejected.
- 7) ☒ Claim(s) 6-17, 25-34, 40-51 and 59-68 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 35-39, 52, 59-61 and 71-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasue et al. [US 6,217,988] in view of Anderson et al. [US 5,969,461].

Regarding claims 35 and 37, Yasue et al. disclose a printed circuit board structure (figure 1a) comprising:

- a circuit board substrate (1) on the surface of which at least one point of an electrical contact (5) has been provided;
- one or more layers of thermal stress relieve material (2,3, abstract) created on the surface of the printed circuit board; and
- an electrical contact (9) between the point of electrical contact on the surface of the printed circuit board and an upper layer contact (4).

Yasue et al. disclose the instant claimed invention except for an integrated circuit chip being mounted on the upper layer contact by means of solder balls.

Anderson et al. disclose an integrated circuit chip mounted on a printed circuit board by means of solder balls connected to contacts (18) on an upper surface of the printed circuit board.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to use the upper layer contact of Yasue et al. to support integrated circuit chip, as suggested by Anderson et al., for the purpose of connecting an integrated circuit chip to the board.

Regarding claim 36, Yasue et al. disclose the instant claimed invention except for the specific type of integrated circuit chip used on the printed circuit board.

The specific type of integrated circuit chip used on the printed circuit board would have an obvious design consideration based on the intended application of the printed circuit board structure.

Regarding claim 38, Yasue et al. disclose the layer being thermal compliant resin material (abstract in line 13).

Regarding claim 39, Yasue et al. disclose a method for producing multiple layer printed circuit board structure and resin filler overlying points of electrical contact (column 4, lines 44-60).

Regarding claim 52, Yasue et al. disclose roughening surface of the created layer to promote adhesion for electroless metal deposition (column 6, lines 27-57).

Regarding claim 53, Yasue et al. disclose curing one or more of the resin layers after the step of creating the resin layer of thermal stress relieve material (column 5, lines 9-14).

Regarding claims 54-56, Yasue et al. disclose the instant claimed invention except for the specific curing process used.

The specific curing process used would have an obvious design consideration based on the type of resin filler material used.

Regarding claim 57, Yasue et al. disclose the contact pads on the upper surface of the resin layer.

Regarding claim 58, Yasue et al. disclose an interconnection via between the electrical contact provided on the surface of the printed circuit board and the contact pads provided on the upper layers.

Regarding claims 71 and 72, Yasue et al. disclose the instant claimed invention except for the specific application process for the thermal stress relieve material.

The specific application process for the thermal stress relieve material would have an obvious design consideration based on the type of thermal stress relieve material/epoxy used.

Regarding claims 1-5, 18-24 and 69-70, as acknowledged by applicant (see response to restriction), the claimed method steps would have been inherent in the product structure.

Allowable Subject Matter

3. Claims 6-17, 25-34, 40-51, 59-68 and 69-70 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Respons to Arguments

4. Applicant's arguments filed 08/05/02 have been fully considered but they are not persuasive.

Applicant argues that:

[1]: Neither Yasue et al. nor Anderson provide for the layer of stress relieve material that is created over the surface of the printed circuit board.

[2]: Yasue does not show a layer being deposited over the surface of the substrate.

Examiner disagrees:

Regarding [1], applicant states that the stress relieve material can be "a layer 48 of elastomer or any other thermally compliant material," applicant specification in page 15, lines 5-13. Yasue et al. disclose a multilayer resin structure to reduce stress cause by heat, column 13, lines 29-63.

Regarding [2], Yasue et al. shows the layer being applied over the surface of the substrate in a fashion similar to that described by applicant's specification page 14, lines 14-16 which states that the elastomer 48 is depositive over the surface of the substrate 40. Yasue states that the insulating layer is "applied onto the substrate," column 11, lines 1-5.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

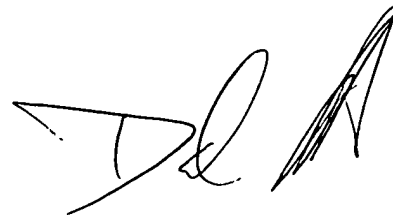
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung S Bui whose telephone number is (703) 305-8024. The examiner can normally be reached on Monday-Friday 8:30AM-6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David S. Martin can be reached on (703) 308-3121. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0956.

HB

10/24/02

A handwritten signature in black ink, appearing to read 'D. Martin', with a stylized flourish at the end.

**DAVID MARTIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**